Claims

[c1] We claim:

1. A method for obtaining a digital image of a heart of a person, comprising:

scanning an internal anatomy of a chest region of the person to obtain first scanning data;

generating a first plurality of cross-sectional digital images of the heart based on the first scanning data;

automatically determining a ventricular blood volume indicated by each of the first plurality of cross-sectional digital images;

automatically selecting a second digital image from the first plurality of cross-sectional digital images indicating a largest ventricular blood volume;

automatically identifying a left ventricular myocardium in the second digital image and both a first apex position and a first base position of the left ventricular myocardium in the second digital image;

automatically generating a first axis extending through the first apex position and the first base position in the second digital image;

scanning the internal anatomy of the chest region of the person along the first axis perpendicular to a first plane

defined by the second digital image to obtain second scanning data;
generating a third digital image of the heart from the second scanning data;
automatically identifying the left ventricular myocardium in the third digital image and both a second apex position and a second base position of the left ventricular myocardium in the third digital image;
automatically generating a second axis extending through the second apex position and the second base position in the third digital image;
scanning the internal anatomy of the chest region of the person along a third plane extending through the second axis and being perpendicular to a second plane defined by the third digital image to obtain third scanning data; and
generating a fourth digital image of four chambers of the heart based on the third scanning data.

[c2] 2.The method of claim 1, further comprising:
automatically identifying the left ventricular myocardium in the fourth digital image and both a third apex position and a third base position of the left ventricular myocardium in the fourth digital image;
automatically generating a third axis extending through the third apex position and the third base position in the

fourth digital image; and
generating a first plurality of planes parallel to one another and perpendicular to both the third axis and to a fourth plane defined by the fourth digital image.

[c3] 3.The method of claim 2, further comprising:
scanning the internal anatomy of the chest region of the person along each of the first plurality of planes to obtain 2-D scanning data; and
generating a plurality of 2-D digital images from the 2-D scanning data, wherein each of the 2-D digital images corresponds to an internal anatomy at one of the first plurality of planes.

[c4] 4.The method of claim 2, further comprising:
scanning the internal anatomy of the chest region of the person along each of the first plurality of planes to obtain 3-D scanning data; and
generating a plurality of 3-D digital images from the 3-D scanning data, wherein each of the 3-digital images corresponds to an internal anatomy proximate one of the first plurality of planes.

[c5] 5.A system for obtaining a digital image of a heart of a person, comprising:
an MRI scanning device configured to scan an internal anatomy of the person to obtain scanning data; and

a computer operably coupled to the scanning device configured to generate cross-sectional digital images based on the scanning data, the computer is further configured to induce the scanning device to scan the internal anatomy of a chest region of the person to obtain first scanning data, the computer is further configured to generate a first plurality of cross-sectional digital images of the heart based on the first scanning data, the computer is further configured to automatically determine a ventricular blood volume indicated by each of the first plurality of cross-sectional digital images, the computer is further configured to automatically select a second digital image from the first plurality of cross-sectional digital images indicating a largest ventricular blood volume, the computer is further configured to automatically identify a left ventricular myocardium in the second digital image and both a first apex position and a first base position of the left ventricular myocardium in the second digital image, the computer is further configured to automatically generate a first axis extending through the first apex position and the first base position in the second digital image, the computer is further configured to scan the internal anatomy of the chest region of the person along the first axis perpendicular to a first plane defined by the second digital image to obtain second scanning data, the computer is further config-

ured to generate a third digital image of the heart from the second scanning data, the computer is further configured to automatically identify the left ventricular myocardium in the third digital image and both a second apex position and a second base position of the left ventricular myocardium in the third digital image, the computer is further configured to automatically generate a second axis extending through the second apex position and the second base position in the third digital image, the computer is further configured to induce the scanning device to scan the internal anatomy of the chest region of the person along a third plane extending through the second axis and perpendicular to a second plane defined by the third digital image to obtain third scanning data, the computer is further configured to generate a fourth digital image of four chambers of the heart based on the third scanning data.

[c6] 6.The system of claim 5, wherein the computer is further configured to automatically identify the left ventricular myocardium in the fourth digital image and both a third apex position and a third base position of the left ventricular myocardium in the fourth digital image, the computer is further configured to automatically generate a third axis extending through the third apex position and the third base position in the fourth digital image,

the computer is further configured to generate a first plurality of planes parallel to one another and perpendicular to both the third axis and to a fourth plane defined by the fourth digital image.

[c7] 7.The system of claim 6, wherein the computer is further configured to scan the internal anatomy of the chest region of the person along each of the first plurality of planes to obtain 2-D scanning data, the computer further configured to generate a plurality of 2-D digital images from the 2-D scanning data, wherein each of the 2-D digital images corresponds to an internal anatomy at one of the first plurality of planes.

[c8] 8.The system of claim 6, wherein the computer is further configured to scan the internal anatomy of the chest region of the person along each of the first plurality of planes to obtain 3-D scanning data, the computer further configured to generate a plurality of 3-D digital images from the 3-D scanning data, wherein each of the 3-D digital images corresponds to an internal anatomy proximate one of the first plurality of planes.

[c9] 9.An article of manufacture, comprising:
a computer storage medium having a computer program encoded therein for
obtaining a digital image of a heart of a person, the

computer storage medium comprising:
code for scanning an internal anatomy of a chest region of the person to obtain first scanning data;
code for generating a first plurality of cross-sectional digital images of the heart based on the first scanning data;
code for automatically determining a ventricular blood volume indicated by each of the first plurality of cross-sectional digital images;
code for automatically selecting a second digital image from the first plurality of cross-sectional digital images indicating a largest ventricular blood volume;
code for automatically identifying a left ventricular myocardium in the second digital image and both a first apex position and a first base position of the left ventricular myocardium in the second digital image;
code for automatically generating a first axis extending through the first apex position and the first base position in the second digital image;
code for scanning the internal anatomy of the chest region of the person along the first axis perpendicular to a first plane defined by the second digital image to obtain second scanning data;
code for generating a third digital image of the heart from the second scanning data;
code for automatically identifying the left ventricular my-

ocardium in the third digital image and both a second apex position and a second base position of the left ventricular myocardium in the third digital image;
code for automatically generating a second axis extending through the second apex position and the second base position in the third digital image;
code for scanning the internal anatomy of the chest region of the person along a third plane extending through the second axis and perpendicular to a second plane defined by the third digital image to obtain third scanning data; and
code for generating a fourth digital image of four chambers of the heart based on the third scanning data.

[c10] 10.The article of manufacture of claim 9, wherein the computer storage medium further comprises:
code for automatically identifying the left ventricular myocardium in the fourth digital image and both a third apex position and a third base position of the left ventricular myocardium in the fourth digital image;
code for automatically generating a third axis extending through the third apex position and the third base position in the fourth digital image; and
code for generating a first plurality of planes parallel to one another and perpendicular to both the third axis and to a fourth plane defined by the fourth digital image.

[c11] 11.The article of manufacture of claim 10, wherein the computer storage medium further comprises:
code for scanning the internal anatomy of the chest region of the person along each of the first plurality of planes to obtain 2-D scanning data; and
code for generating a plurality of 2-D digital images from the 2-D scanning data, wherein each of the 2-D digital images corresponds to an internal anatomy at one of the first plurality of planes.

[c12] 12. The article of manufacture of claim 10, wherein the computer storage medium further comprises:
code for scanning the internal anatomy of the chest region of the person along each of the first plurality of planes to obtain 3-D scanning data; and
code for generating a plurality of 3-D digital images from the 3-D scanning data, wherein each of the 3-digital images corresponds to an internal anatomy proximate one of the first plurality of planes.